

AMENDMENTS TO THE DRAWINGS

The attached sheets of drawings includes changes to Figs. 1, 2A-H, 3A-B, 4, and 5A-B. The legend “Background Art” has been changed to “Prior Art”. In Figs. 7A-B the mixer symbol has been changed to an adder symbol for reference numerals 355, 356 and 359.

REMARKS

Applicants thank the Examiner for thorough consideration given the present application. Claims 1, 3-6 and 8-10 are currently being prosecuted. The Examiner is respectfully requested to reconsider his rejections in view of the amendments and remarks as set forth below.

OBJECTIONS TO THE DRAWINGS

The Examiner objected to the drawings as using the term "Background Art". By way of the present amendment, Applicants have changed this legend to "Prior Art" as suggested by the Examiner. Accordingly, this objection is overcome.

In Fig. 7A and 7B the Examiner pointed out that the mixer symbol should be replaced by the adder symbol for reference numerals 355, 356 and 359. This has also been accomplished by way of the substitute drawings submitted herewith.

The Examiner objected to the drawings as not showing every feature of the claimed invention. In particular, the Examiner states that the method for processing a signal is not shown. By way of the present amendment, the method claims have been cancelled rendering this objection moot.

SPECIFICATION

The Examiner objected to the Abstract. By way of the present amendment, Applicants have used the full title of the Vestigial Sideband. In addition, Applicants have removed the reference to the method in the first line.

The Examiner objected to the title as being non-descriptive. Applicants have utilized the title suggested by the Examiner, except that the part of the title referring to the method has been removed.

The Examiner objected to the specification due to the use of “related art”, the use of the abbreviation for Vestigial Sideband, to add the parameter (t) in the various equations, to remove numbers for the various bases, to correct figure numbers and remove the reference to Figure 8 in regard to the term “asymmetrical”. By way of the present amendment, Applicants have made these changes to the specification.

CLAIM OBJECTIONS

The Examiner objected to the claims due to a number of informalities relating to the full title of the Vestigial Sideband, the use of numbers in regard to the bases and adders, to use more definite language in regard to the real and imaginary signals and to define the frequencies used in the equations. By way of the present amendment, Applicants have amended the claims in the manner suggested by the Examiner. In regard to claims 12 and 13, these claims have been cancelled, rendering this part of the objection moot. Also, in regard to claims 2 and 7, this language has been added to independent claims 1 and 5, but has been changed in those claims instead. Accordingly, these objections are now overcome.

OBJECTION UNDER 35 USC §103

Claims 1, 2, and 4 stand rejected under 35 USC §103 as being obvious over Strolle et al. (U.S. Patent 5,872,815) in view of the Franks publication. This rejection is respectfully traversed.

The Examiner states that Strolle et al. shows a VSB receiver having an intermediate frequency signal generator, a demodulator generating a complex base band signal having an I channel and a Q channel and a base band matched filter filtering at least one of the I channel signal and the Q channel signal. The Examiner admits that Strolle et al. does not specifically disclose that the matched filter is complex. The Examiner relies on Franks to disclose a complex base band matched filter. The Examiner feels it would have been obvious to one of ordinary skill in the art to supplement the matched filter disclosed by Strolle et al with the low-pass equivalent operation on complex envelope signals disclosed by Franks.

In regard to claim 2 which has now been incorporated into claim 1, the Examiner feels that Franks also discloses that the complex base band matched filter includes the recited filters and adders and their respective connections.

By way of the present amendment, Applicants have added the limitations of claim 2 into claim 1. Claim 4 has also been rewritten into independent form to include the limitations of original 1. Applicants submit that amended claims 1 and 4 are not obvious over this combination of references.

The Strolle et al. reference includes the use of a matched filter, although these matched filters are not necessarily the same as that of Franks. Franks discloses the operation of a complex filters, but Strolle et al. does not disclose the same structure and operation as Franks. Since the present invention uses a complex base band matched filter, this is clearly not shown in Strolle et

al. The purpose of Strolle et al. is to provide a digital television receiver including a source of a digital television receiver not focused on a matched filter.

While Franks discloses the operation of a complex filter, it only discloses the theory concerning processing a signal by a complex number generally. Applicants submit that it would not be obvious to one of ordinary skill in the art to utilize the complex number arrangement of Franks with Strolle et al. or the other references.

The present invention includes a vestigial sideband receiver including a complex base band match filter. This arrangement is not shown in either of the references or their combination. Applicants submit that claims 1 and 4 are patentable over this combination of references.

The Examiner rejected claim 3 as being obvious over Strolle et al. and Franks and further in view of Endres et al. (U.S. Patent 6,426,972). This rejection is respectfully traversed.

The Examiner admits that Strolle and Franks do not disclose the complex base band match filter designed so that the frequency characteristic is identical to a frequency spectrum of the base band signal. The Examiner feels that it would have been obvious to supplement the matched filter of Strolle et al. and Franks with the frequency characteristics detail disclosed by Endres et al.

It is submitted that even if the Endres et al. reference does show the features suggested by the Examiner, that this claim remains allowable based on its dependence from allowable claim 1.

Claims 5, 7 and 13 stand rejected under 35 USC §103 as being obvious in view of Claydon et al. (U.S. Patent 5,724,396) and further in view of Franks. This rejection is respectfully traversed.

First claims 7 and 11-13 have been cancelled rendering this part of the rejection moot. The limitations of claim 7 have been added to claim 5.

The Examiner states Claydon et al. shows a receiver having a first multiplier multiplying a received signal by intermediate frequency signals to generate an intermediate band signal, a second multiplier to demodulate intermediate frequency band signal to an I channel signal and the third multiplier to demodulate the intermediate frequency band signals to a Q channel signal. The Examiner admits that Claydon et al. does not disclose a complex base band matched filter filtering at least one of the channel signals to output a complex signal. The Examiner relies on Franks to disclose a complex base band match filter filtering at least one of the two demodulated channel signals. Applicants submit that the Claydon et al. reference has a purpose of providing a CMOS integrated signal processing system for a specific sampling receiver, but not a complex base band matched filter. Thus, the purpose and effect of this reference is completely different from that of the present invention. The Claydon et al. reference does not show the operation of a complex filter in the same manner that Strolle et al. does not show such a complex filter. While Franks shows the theory of processing a signal by a complex number in general, Applicants submit that the operation of the present invention would not be obvious over a combination of Claydon et al. and Franks. Thus, the present invention includes a vestigial sideband receiver applying a complex base band match filter which is not shown by either the references and which would not be obvious thereover. Accordingly, Applicants submit that claim 5 is likewise allowable.

Claims 6 and 8-10 depend from claim 5 and as such are also considered to be allowable. In addition, each of these claims recites other features of the invention which would make these claims additionally allowable.

Claim 6 stands rejected under 35 USC §103 as being unpatentable over Claydon et al. and Franks and further in view of Endres. This rejection is respectfully traversed.

Applicants submit that claim 6 is allowable based on its dependency from allowable claim 5. Even if the Endres references reference does teach the features suggested by the Examiner, Applicants submit that the claims remains allowable based on its dependency from an allowable independent claim.

CONCLUSION

In view of the above remarks, it is believed that the claims clearly distinguish over the patents relied on by the Examiner, either alone or in combination. In view of this, reconsideration of the rejections and allowance of all the claims are respectfully requested.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone Robert F. Gnuse, Registration No. 27,295, at (703) 205-8000, in the Washington, D.C. area.

Prompt and favorable consideration of this Amendment is respectfully requested.

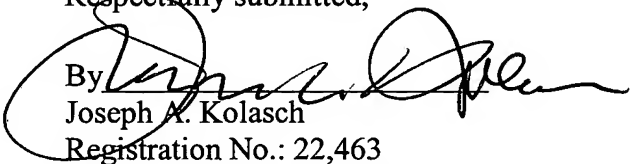
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If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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Attachments